IDA CORPORATION

SERIES 24-10 D.C. REMOTES

FIELD INSTALLATION MANUAL

THIS MANUAL CONTAINS ALL INFORMATION NORMALLY REQUIRED FOR FIELD INSTALLATION OF IDA CORPORATION SERIES 24-10 D.C. REMOTES. FOR ADDITIONAL INFORMATION, CONSULT THE MAINTENANCE MANUAL. BE SURE TO COMPLETE AND MAIL THE ENCLOSED WARRANTY REGISTRATION CARD.

GENERAL DESCRIPTION

The IDA Corporation Series 24-10 D.C. Remotes are lines of solid state control units providing extended operation of a base station radio over D.C. phone lines. These units maintain operators control of keying, tone squelch disable, audio control and audio functions thus making them an ideal compliment to any two-way radio system.

The Series 24-10 is completely compatible with existing systems that utilize dual currents, dual polaritys function selection. In addition, reverse polarity keying is available for systems that do not use the positive polarity keying technique. These Series of D.C. remotes offers many unique features such as, completely isolated transmit and receive paths which maintain clarity of audio signal reproduction and generation, high gain integrated circuits for audio amplifiers which are thermally protected against current overloads and state of the art circuitry that offers the user a stable rugged, compact, efficient, yet function and stylish unit.

ELECTRICAL SPECIFICATIONS

Supply Voltage: 117 VAC 60Hz
Supply Power: Transmit 11 Watts; Receive 10 Watts; Standby 6 Watts
Operating Temperature: $-30^{\circ}C$ to $60^{\circ}C$
Line Impedance: Transmit 600 Ohms; Receive 600 or 5K Ohms
Audio Output Level: -10dBM to +30dBM S/N Ratio: 50dB
Audio Input Level: -30dBM to +10dBM S/N Ratio: 49.7dB
Line Control: 2 or 4 wire
Line Control Voltage: 130 VDC Maximum
Line Control Current: 6mA and 15mA, Adjustable for both.
Maximum Loop Resistance: 8000 Ohms Optional Panel: 30,000 Ohms
Audio Output Power to Speaker: 2 Watts @ less than 1% distortion.
Dimensions: 5"W X 9"D X 5"H
Weight: 4 Pounds
Color: Beige

OPERATION

The Series 24-10 D.C. Remotes are stand-alone functional devices that efficiently control base station radios by the following description. When the handset is in its' cradle, all incoming calls are monitored thru the built-in speaker. The action of removing the handset from the cradle automatically transfers audio from the internal speaker to the handset earpiece and provides a D.C. voltage of proper polarity and level to disable subaudible tone on the selected frequency. The monitor switch (optional) provides CTCSS disabling for on-hook monitoring on systems equipped with tone-coded squelch without the need to lift the handset. In addition, the intercom switch allows calls between control points by merely changing the select switch to ICOM and operating the push-to-talk switch as usual.

INSTALLATION

The Series 24-10 D.C. Remotes may be operated using three types of telephone or hard-wired line connections. The choice of line connection is up to the user who should consider the cost and performance of each type.

Any transmission circuit of D.C. continuity capable of handling audio frequencys from 300 to 3500 Hz can be used. One method of control utilizes one metalic pair for both audio signals and D.C. control voltages. (See method 1 schematic in this section.) This method of control is most frequently used because it is economical and dependable where earth ground currents may be large or where a reliable earth ground cannot be obtained.

A second type of control utilizes one metallic pair for both audio and control voltages but with control voltages simplexed from line to ground. (See method 2 schematic in this section.) This type of connection minimizes keying clicks but may encounter earth ground currents which result in interference with control functions.

A third type of control utilizes two metallic pairs, one for audio and one for control voltages. (See method 3 schematic in this section.) This method of control provides the best performance to minimize keying clicks and earth ground currents, however, it does necessitate the use of two dedicated lines instead of one.

ADJUSTMENT PROCEDURES

The Series 24-10 D.C. Remotes are designed for four areas of adjustment. All adjustments are made utilizing a screwdriver on a single turn potentiometer. To gain entry to these adjustments simply depress the keeper on the faceplate.

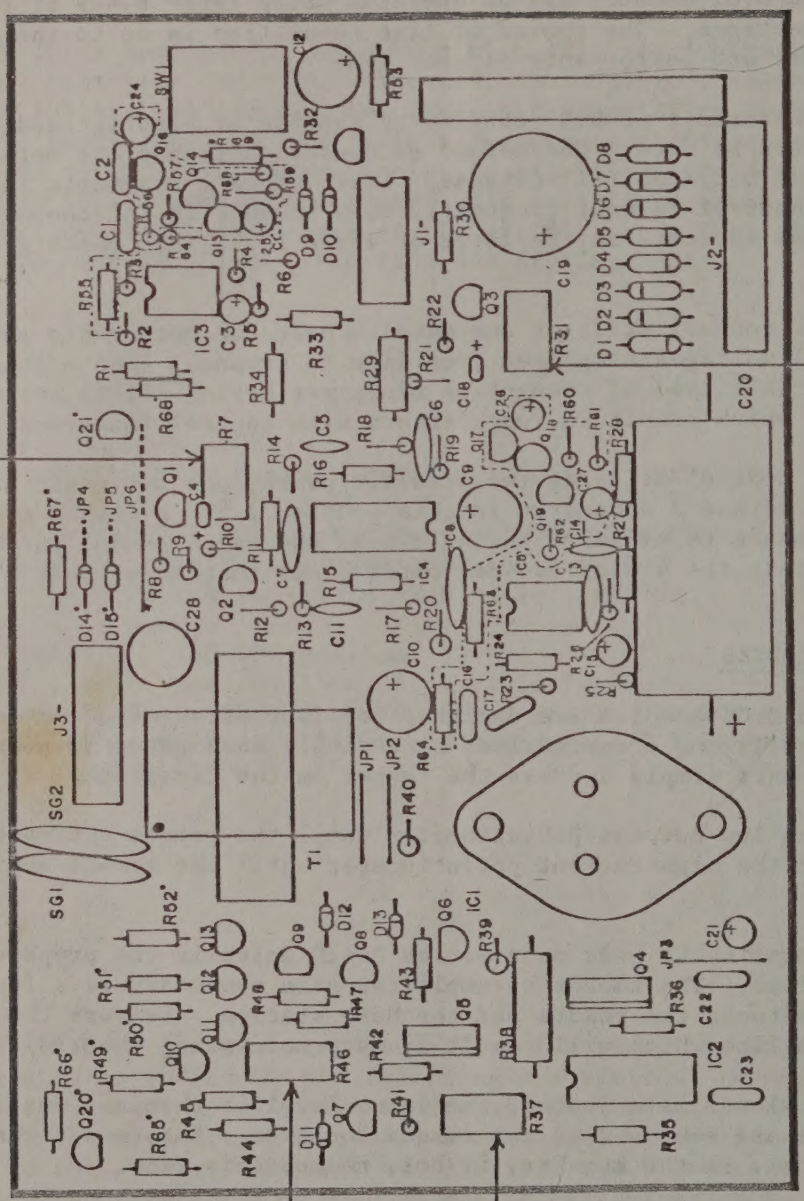
First, adjust the low current potentiometer until the remote activates the monitor relay. Then set the high current potentiometer until the remote activates the keying relay.

The next adjustment to be made on a Series 24-10 units is the proper output audio level into the line. The amount of amplifier gain necessary is a function of the length of line between the remote and the base station. Be sure the signal is not too hot into the line which will result in over-modulating the radio.

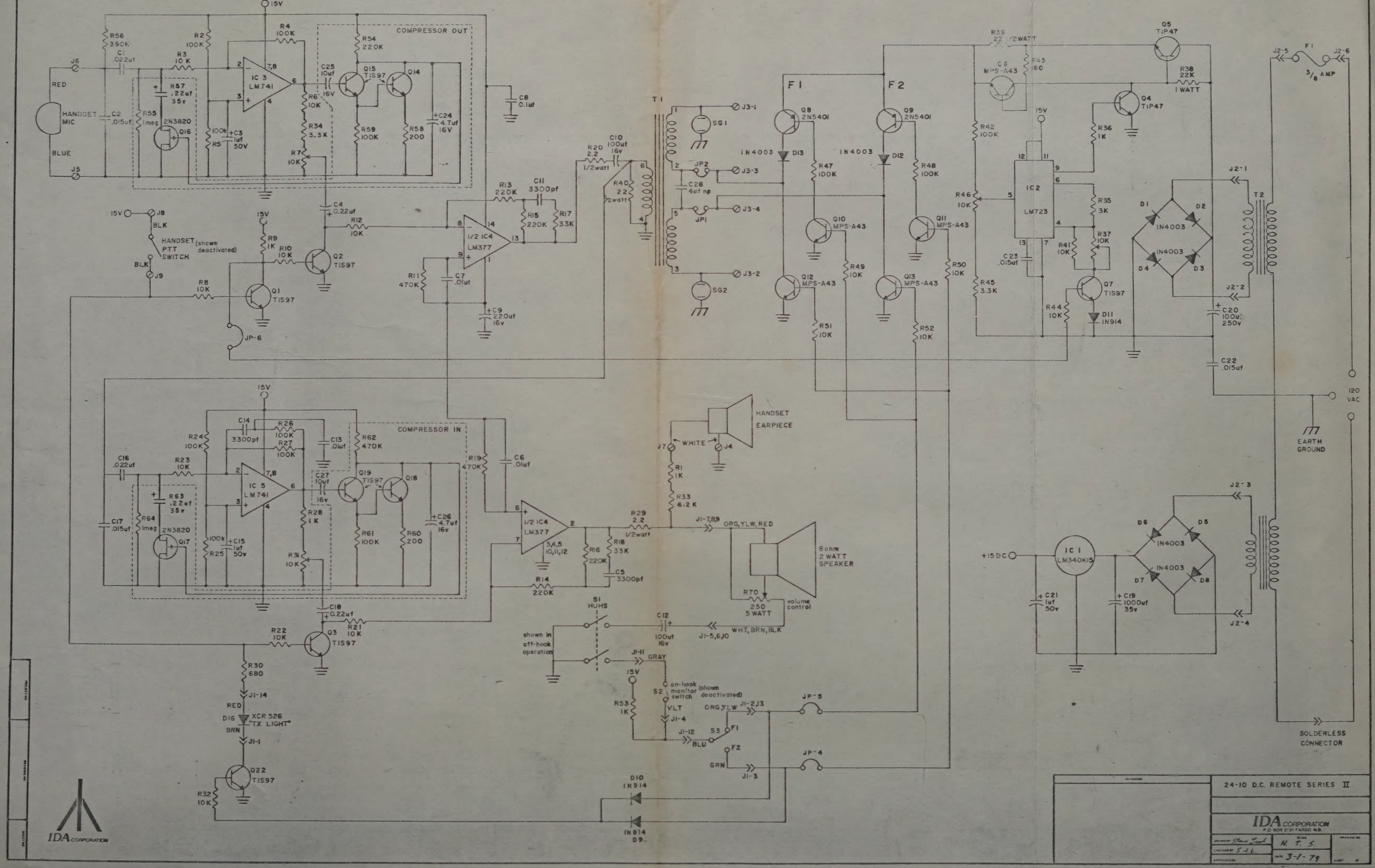
After the output level is adjusted, the input level is then set until safisfactory listening levels are achieved at the remote location. Ensure a clean undistorted signal is produced in the speaker, if not, reduce this gain.

COMPRESSOR OPTION

Compression (both in and out) should be utilized when two or more remotes are connected to a common control line and they are located an appreciable distance from the base station radio. This option will eliminate the effects of blasting in the units caused by audio signal loss on the common line to the radio.



24-10 SILK SCREEN


15V
R56 390K
C1 .022uf
J6
RED
HANDSET MIC
BLUE
J5
C2 .015uf
R55 1meg
2N3820 Q16
R57 .22uf 35v
R3 10K
R2 100K
100K R5
+C3 1uf 50V
IC 3 LM741
R4 100K
R6 10K
R34 3.3K
R7 10K
COMPRESSOR OUT
R54 220K
C25 10uf 16V
Q15 TIS97
Q14
R59 100K
R58 200
+C24 4.7uf 16V
C8 0.1uf
C4 0.22uf
R12 10K
R13 220K
C11 3300pf
R15 220K
R17 33K
1/2 IC4 LM377
C10 100uf 16v
R20 2.2 1/2watt
R40 22 1/2watt
T1
J3-1
SG1
JP2
J3-3
C28 4uf np
J3-4
JP1
J3-2
SG2
F1
F2
Q8 2N5401
Q9 2N5401
IN4003 D13
IN4003 D12
R47 100K
R48 100K
Q10 MPS-A43
Q11 MPS-A43
Q12 MPS-A43
Q13 MPS-A43
R49 10K
R50 10K
R51 10K
R52 10K
R39 22 1/2WATT
C6 MPS-A43
R43 180
Q5 TIP47
R38 22K 1WATT
Q4 TIP47
R42 100K
R36 1K
R46 10K
R45 3.3K
IC2 LM723
R35 3K
R37 10K
R41 10K
C23 .015uf
Q7 TIS97
R44 10K
D11 IN914
D1 D2 D3 D4 IN4003
J2-1
J2-2
T2
+C20 100uf 250v
C22 .015uf
J8 BLK
HANDSET PTT SWITCH (shown deactivated)
BLK
J9
R9 1K
R10 10K
Q2 TIS97
R8 10K
Q1 TIS97
JP-6
R11 470K
C7 .01uf
+C9 220uf 16v
C14 3300pf
R26 100K
R27 100K
C13 .01uf
R62 470K
R24 100K
C16 .022uf
R23 10K
R63 .22uf 35v
R64 1meg
2N3820 Q17
C17 .015uf
100K R25
+C15 1uf 50v
IC 5 LM741
C27 10uf 16v
Q19 TIS97
Q18
R28 1K
R31 10K
R61 100K
R60 200
+C26 4.7uf 16v
R19 470K
C6 .01uf
1/2 IC4 LM377
3,4,5 10,11,12
R29 2.2 1/2watt
R16 220K
R18 33K
C5 3300pf
R14 220K
C18 0.22uf
R21 10K
Q3 TIS97
R22 10K
R30 680
J1-14
RED
D16 XCR 526 "TX LIGHT"
BRN
J1-1
Q22 TIS97
R32 10K
HANDSET EARPIECE
J7 WHITE J4
R1 1K
R33 6.2K
J1-7,8,9 ORG,YLW,RED
8 ohm 2 WATT SPEAKER
R70 250 5 WATT volume control
S1 HUHS
shown in off-hook operation
C12 100uf 16v
J1-5,6,10 WHT, BRN, BLK
J1-11 GRAY
S2 on-hook monitor switch (shown deactivated)
R53 1K
VLT
J1-4
J1-2,13 ORG,YLW
JP-5
J1-12 BLU
S3
F1
F2
GRN
J1-3
JP-4
D10 IN914
IN914 D9
+15 DC
IC 1 LM340K15
C21 1uf 50v
D6 D5 D7 D8 IN4003
+C19 1000uf 35v
J2-3
J2-4
J2-5
J2-6
F1 3/8 AMP
120 VAC
EARTH GROUND
SOLDERLESS CONNECTOR
24-10 D.C. REMOTE SERIES II
IDA CORPORATION
P.O. BOX 2731 FARGO, N.D.
SCALE N.T.S.
DATE 3-1-79
IDA CORPORATION